

**Hearing of the House Energy and Commerce, Oversight
and Investigations Subcommittee**

**The Role of the National
Institutes of Health in
Research Addressing Seasonal
and Pandemic Influenza**

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Director

**National Institute of Allergy and
Infectious Diseases**

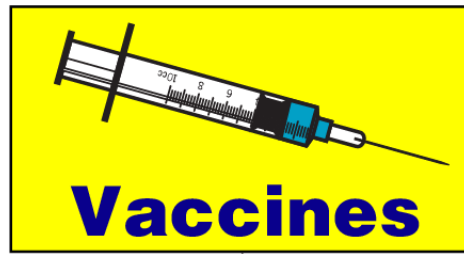
National Institutes of Health

March 8, 2018

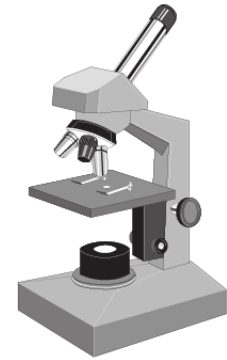




Therapeutics



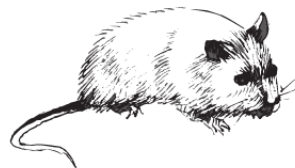
Vaccines



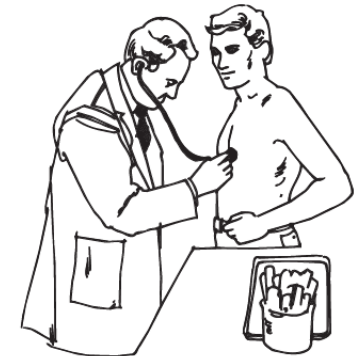
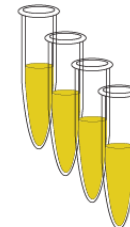
Diagnostics



**Basic
Research**



Research Resources



**Field and
Clinical
Research**

- **Current seasonal influenza vaccines are not consistently effective**
- **Pandemics do occur and response after the fact is not effective**
- **“Chasing after” potential pandemic outbreaks (pre-pandemic viruses) is costly and ineffective**

Major Challenges in Influenza Vaccinology

- **Improve efficacy of current influenza vaccines**
- **Improve production of influenza vaccines – egg-based vs. cell-based vs. recombinant DNA technology**
- **Develop universal influenza vaccines for broad coverage**

Evolution of Technologies for Influenza Vaccines





**Seasonal
Influenza
Preparedness**

**Pandemic
Influenza
Preparedness**



The
New England
Journal of Medicine

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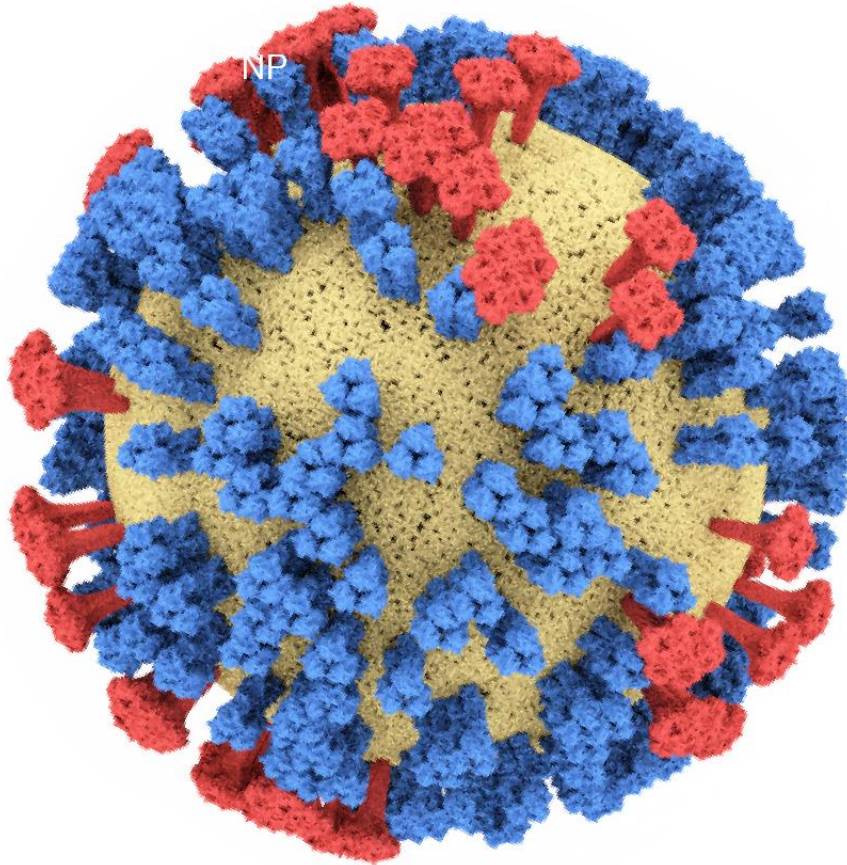
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Number 1

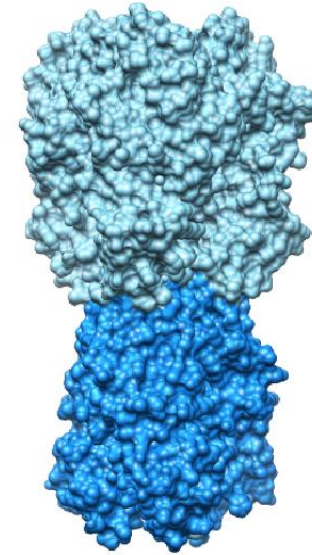
Chasing Seasonal Influenza – The Need for a Universal Influenza Vaccine

CI Paules, SG Sullivan, K Subbarao, and AS Fauci

Hemagglutinin Protein: Major Target of Influenza Vaccines

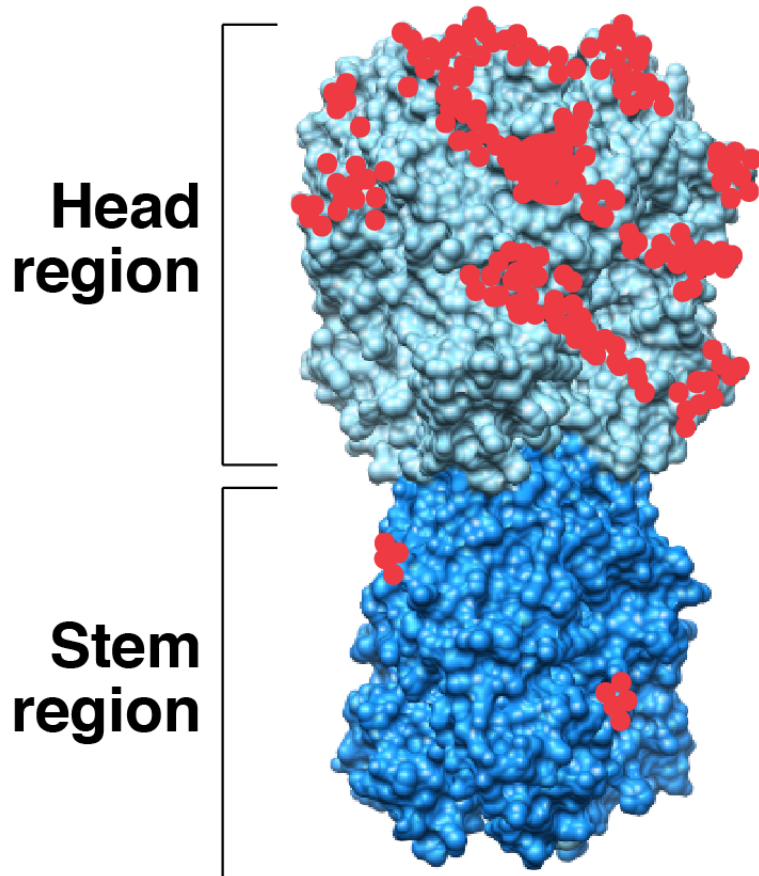


Influenza Virus



**Hemagglutinin (HA)
Protein**

Influenza A Hemagglutinin (HA)



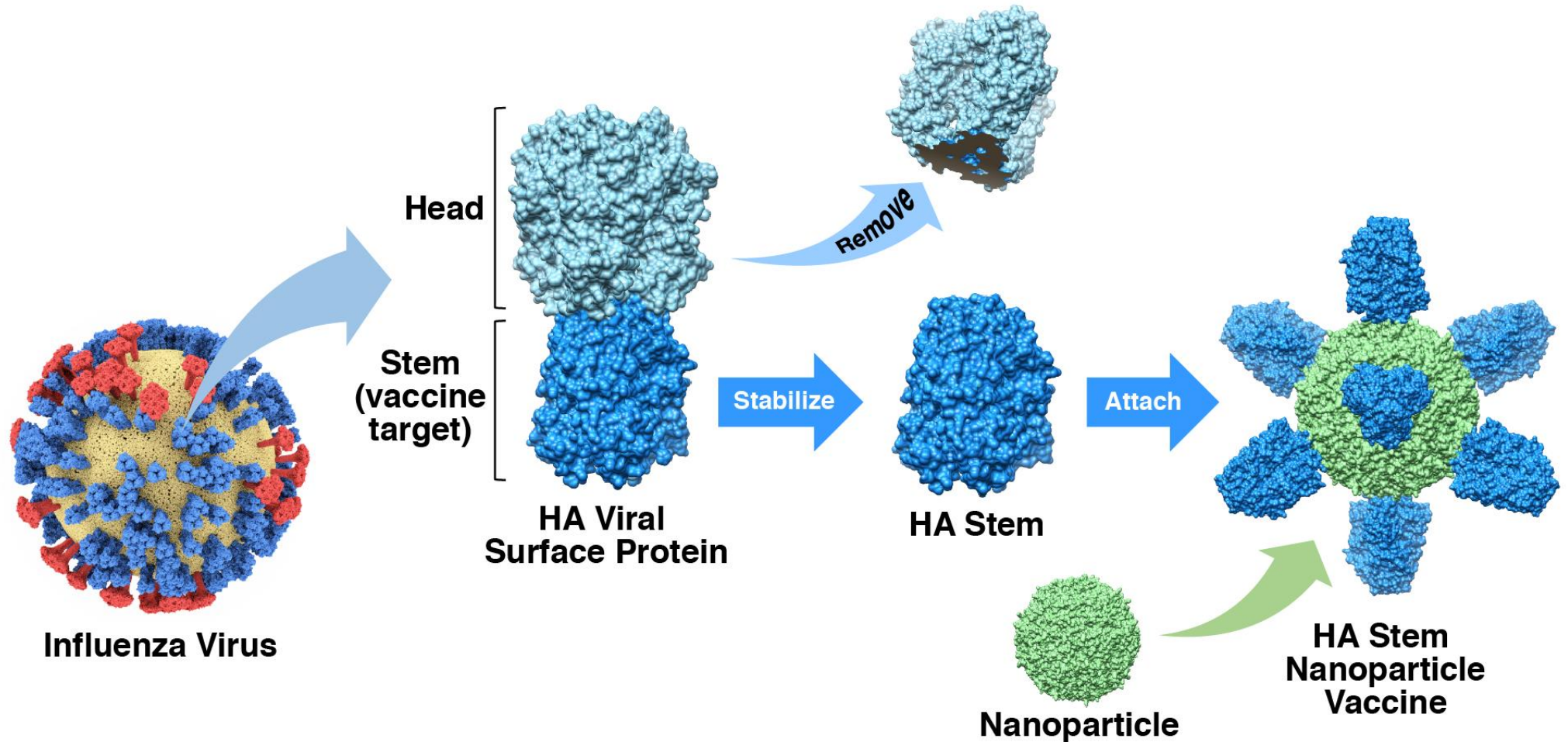
Head region

- Target of current influenza vaccines
- Differs among influenza strains
- Many mutations (●) each season

Stem region

- Target of universal influenza vaccines
- Similar among influenza strains
- Few mutations each season

Representative Approach to the Development of a Universal Influenza Vaccine





NIAID-Sponsored Workshop

Pathway to a Universal Influenza Vaccine

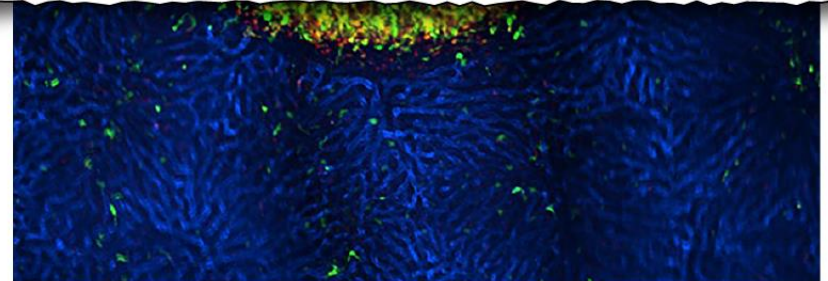
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The Pathway to a Universal Influenza Vaccine

CI Paules, HD Marston, RW Eisinger, D Baltimore,
AS Fauci



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A Universal Influenza Vaccine: The Strategic Plan for the National Institute of Allergy and Infectious Diseases

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S Ferguson, CI Paules, BS Graham, AS Fauci**